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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|

08/958,865 10/27/97 KADNER 2417977/33147

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| EXAMINER | |
| MONTH(S) FROM THE | |
| STRAUB, G | |
| ART UNIT | PAPER NUMBER |

1754

DATE MAILED 06/04/99

ING CUSHMAN, DARBY & CUSHMAN
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Status

Response to communication filed

This action is FINAL.

Please find below and/or attached an Office communication concerning this application or proceeding.

Disposition of Claims

Claim(s) 1-10

Claim(s) 1-10

Claim(s) 1-10

Claim(s) 1-10

Claim(s) 1-10

Claim(s) 1-10

Commissioner of Patents and Trademarks

are pending in the application.

are withdrawn from the application.

is/are allowed.

is/are refused.

is/are objected to.

are objected to without an election of the right to amend.

Application Papers

See attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The proposed drawing correction filed on _____ is approved (initials) _____

The drawing(s) filed on _____ is/are objected to by the Examiner.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some None of the CERTIFIED copies of the priority documents have been received.

received in Application No. (Series Code/Serial Number) _____

received in the national stage application from the International Bureau (PCT Rule 17.2(a))

Certified copies not received.

Attachment(s)

Information Disclosure Statement(s), PTO-1449, Paper No(s) _____

Notice of References Cited, PTO-892

Notice of Draftsperson's Patent Drawing Review, PTO-948

Interview Summary, PTO-413

Notice of Informal Patent Application, PTO-152

Other _____

Office Action Summary

Office Action Summary

Application No.

08 958 865

Applicant(s)

KADNER

Examiner

STRAUB

Group Art Unit

1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 3/24/99.
- ☒ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 19-27 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 19-27 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____.
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of References Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The art area applicable to the instant invention is that of catalyst support preparation and metal oxide bead formation.

One of ordinary skill in this art is considered to have at least a B.S. degree, with additional education in the field and at least 5 years practical experience working in the art; is aware of the state of the art as shown by the references of record, to include those cited by applicant and the examiner (*ESSO Research & Engineering V Kahn & Co*, 183 USPQ 582 1974) and who is presumed to know something about the art apart from what the references alone teach (In re Bode, 193 USPQ 12, (16) CCPA 1977; and who is motivated by economics to depart from the

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prior art to reduce costs consistent with the desired product characteristics. (In re Clinton 188 USPQ 365 (367) CCPA 1976 and In re Thompson 192 USPQ 275 (277) CCPA 1976.

3 Claims 19-27 are rejected under 35 U.S.C. 103 as being obvious to one of ordinary skill in the art in view of Bezzi et al -200 taken with Takami and Sanchez et al, the combination taken with Landis or DeHaven et al.

Bezzi et al fairly shows the production of metal oxide beads from a hydrolyzable feed, which is processed by the instant process steps. Bezzi et al fairly shows the formation of droplets by vibration of as droplet formation head, the use of a reactive atmosphere of ammonia gas to pregel the feed, generation of a foam layer on top of an aqueous ammonia solution, to retard the fall of the pregelled beads, completion of the gelation in the aqueous ammonia hydroxide bath, followed by the drying and calcination of the formed beads into particles of the corresponding oxide.

Note Abstract, figure 1, column 1, lines 15-30, column 2, lines 10-20, column 3, lines 19-22 and the claims.

While Bezzi et al -200 does not explicitly recite alumina bead manufacture, it would have been obvious to one of ordinary skill in the art of metal oxide bead formation and who is well aware that alumina oxide beads are routinely made by gelling droplets to employ the process of Bezzi et al to make alumina beads from an alumina precursor feed solution. This is considered particularly obvious since in column 1, lines 8-9 and 49-50, Bezzi et al teaches to employ his process to make spherical particles for catalysts, which supports are commonly made of alumina.

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In any event, Bezzi et al is generic to the production of metal oxide beads from materials which are hydrolyzable with ammonia and ammonia hydroxide such as materials which are used for catalysts, column 1, lines 6-9. As shown by Sanchez et al, claim 1 and Takami, claim 1, the formation of aluminum oxide beads via drop forming methods is conventional and known to one of ordinary skill in the art. It would have been obvious to one of ordinary skill in the art to form aluminum oxide beads using the drop forming process of Bezzi et al because Sanchez et al and Tanami et al show that aluminum oxide beads are routinely formed in the art by drop forming methods and because the references show that the aluminum oxide beads that they form have the same utility in catalytic processes..

While Bezzi et al does not show the use of a ring of nozzles for the formation of the droplets, the use of a ring of nozzles to provide a plurality of streams of droplets to be solidified in a drop tower is conventional and shown by Landis (figure , item 4) and De Haven who shows a vibrating ring of nozzles in his figures. The use of the conventional ring of nozzles such as those shown by Landis and DeHaven to provide a plurality of streams in the bead forming process of Bezzi et al would have been obvious to one of ordinary skill in the art because of the expected increase in production capacity over a single nozzle.

While this combination of a ring of droplet forming nozzles into the process of Bezzi et al would not specifically teach the supply of ammonia from the inside or outside the ring of droplet forming nozzles, in view of the requirement in Bezzi et al that each of the droplets formed enter the aqueous gelling solution with the same degree of pregellation, it would have been obvious to

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one of ordinary skill in the art to provide a uniform ammonia atmosphere for the ring of droplets from the droplet forming nozzle by providing by providing an annular supply of ammonia from outside the ring, by providing a supply of ammonia from the axis of the ring or a combination of annular and ammonia supply from the axis. It would have been readily apparent to one of ordinary skill in the art that supply of ammonia from a single point source outside the ring of droplets could well lead to an atmosphere of ammonia that is non-uniform since the droplets near the point supply of ammonia would both consume ammonia as they gel and would physically mask the droplets on the far side of the ring from the ammonia supply.

4 Applicants' prior arguments were reconsidered, but remain not persuasive.

The urging that on the lateral supply of ammonia is noted as is the figure of Bezzi et al which shows lateral flow. The urging that the ammonia gas is blown from nozzles that are disposed on a ring exterior and a ring exterior is noted. The claims do not require a plurality of ammonia supply nozzles since the term, at least one nozzle, clearly embraces one and only one ammonia nozzle and the term, if necessary, does not require that a second ammonia nozzle on the ring exterior be present. Further there is no requirement that the nozzles be located on a ring interior or a ring exterior. From the disclosure, at best the ammonia is supplied from the interior or exterior of the ring of droplets formed by the ring of nozzles in the vibrating nozzle plate. The urging that the instant beads are of uniform shape, have a narrow grain structure good porosity high abrasion strength and low abrasion loss is noted. The claims do not so required. Further,

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there is not comparative data of record that shows that the instant beads have properties that are different in fact from the beads of the prior art.

5 Applicants arguments filed march 24 1996 were not persuasive. The urging that the references do not explicitly recite the use of an annular nozzle plate having at least ten nozzles is noted. While this limitation is not explicitly taught by any of the references, the provision of a plurality of nozzles for the expected result of increasing production in scale up is routine design. It is noted that there is no criticality shown for either an annular nozzle plate or more than 10 nozzles. The urging that each of the references contain disclosures which are not identical is noted. This is what would be expected when reviewing patents which are to be drawn to distinct inventions. The urging that one reference does not teach what another does, does not point out how the instant claims would not have been obvious to one of ordinary skill in the art, who is aware of the teaching of all the references and would not combine the references willy nilly. The urging on obvious to try is noted, however, it is considered that the references fairly set forth that it would have been obvious to do, and that a trial would have a reasonable probability of success.

6 **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7 No Claims are allowed

8 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Gary P. Straub whose telephone number is (703) 308-1094.

Any inquiry of a general nature or regarding the status of this application should be directed to the group receptionist whose telephone number is (703) 308-0662.

The fax number for Technical Center 1700 is 703-305-3599.



Gary P. Straub
Primary Examiner
Art Unit 1754

Straub/gps
June 4, 1999